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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,088	12/12/2003	Murali Nagaraj	5760-15300	1598

35690 7590 06/21/2006

MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.  
700 LAVACA, SUITE 800  
AUSTIN, TX 78701

EXAMINER

OPARE ABETIA, JOSEPH C

ART UNIT PAPER NUMBER

2165

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/735,088	<b>Applicant(s)</b> NAGARAJ ET AL.	
	<b>Examiner</b> Joseph C. Opare-Abetia	<b>Art Unit</b> 2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/02/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 4, 7,8, 9, 10,11, 12, 13, 16, 17, 19, 20, 22, 23, 25, 26 29 and 30 are rejected under 35 U.S.C. 102(b) as being unpatentable by Lustre (A scalable, High-Performance File System Cluster File Systems, Inc. and Lustre hereinafter)

With respect to claims 1 and 7, Lustre discloses a method for pre-allocating space for a file in a cluster file system, comprising: a client sending a request message, wherein the request message includes information to create the file (i.e., *“creating a new file causes the client to contact a metadata server, which creates an inode for the file and then contacts the OSTs to create objects that will actually hold file data.”*) The preceding text clearly indicates that before a file can be created, the client has to contact the object storage target (OST) therefore one skilled in the art can easily claim that a client sends a request to create file)(Page 3, lines 3-6); a server receiving the request message (i.e., *“creating a new file causes the client to contact a metadata server.”*) The preceding text clearly indicates that the client contact server before a new file is created therefore a person skilled in the art can claim that the

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server receives a request message from the client before the file is created)(page 3 lines 4-5); creating the file in the cluster file system in response to the information (i.e., *“creating a new file causes the file system to allocate an inode and set some of its basic attributes. Create the requested file”* the preceding text clearly indicates that upon receiving a request, a file gets created therefore a person skilled in the art can easily claim that creating the file in the cluster file system in response to the information)(page 3, lines 3-4); allocating space in a storage to the file in response to the information (i.e., *“The objects allocated on OSTs hold the data associated with the file...”* The preceding text clearly indicates that the file created is associated with the Object storage test)(page 3, lines 6-7); sending a response message, wherein the response message includes information indicative of the space in the storage (i.e., *“Subsequent I/O to the newly created file is done directly between the client and the OST, which interacts with the underlying OBDs to read and write data.”* The preceding text clearly indicates that there is a communication going on between the client and OST to determine to create file. Therefore, a person skilled in the art can easily claim a response message includes information indicative of the space in the storage to create file)(page 3, lines 9-10); and the client receiving the response message (i.e., *“Actual file I/O is done directly between Object Storage Targets and client systems.”* The preceding text clearly indicates that there is a communication going between client and the OST therefore one skilled in the art can claim that upon completion of creating file, the OST sends a response to the client to notify it)(page 6, lines 2-3).

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With respect to claims 2, 8 and 11, Lustre discloses a method comprising setting a predetermined amount of space to be allocated in response to the information (i.e., *“setting special bits on directories that are to be used as mount points, and then storing the mount information in a special file in each such directory.”*) The preceding text clearly indicates that system set aside an amount of space for future use therefore a person skilled in the art can easily claim a method of setting a predetermined amount of space to be allocated in response to the information)(page 9 line 12-13).

With respect to claims 3, 9 and 12, Lustre discloses a method further comprising performing said creating the file and said allocating space in an atomic transaction (i.e., *“In existing file systems, creating a new file causes the file system to allocate an inode and set some of its basic attributes.”*) **Inode** is defined on dictionary.com as a data structure holding information about files in a Unix file system. The preceding text clearly indicates that the system assign space for file to be saved)(page 3, line 3-5).

With respect to claim 4, Lustre discloses a system, comprising: a network (i.e., *“file system sharing with full coherency by providing support for SAN networking.”*) The preceding text clearly indicates that there is a network existing in the system)(page 12, line 4); one or more servers coupled to the network (i.e., *“it is possible to connect some clients over an Ethernet to the MDS and OST servers, and others over a QSW network.”*) The preceding text and figure 1 clearly indicates that one or more servers is/are attached to the network)(page 6, lines 21-22); one or more clients coupled to

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the network (i.e., *“it is possible to connect some clients over an Ethernet to the MDS and OST servers, and others over a QSW network.”*) The preceding text and figure 1 clearly indicates that one or more client is/are attached to the network)(page 6, lines 21-22); a storage coupled to each of the one or more servers (i.e., *“Figure 2: Interactions Between Lustre Subsystems.”*) The preceding clearly indicates that the storage device is connected to a server)(page 3 fig. 2); and a cluster file system including program instructions executable to implement a method including: a client of the one or more clients sending a request message, wherein the request message includes information to create a file (i.e., *“creating a new file causes the client to contact a metadata server, which creates an inode for the file and then contacts the OSTs to create objects that will actually hold file data.”*) The preceding text clearly indicates that before a file can be created, the client has to contact the object storage target (OST) therefore one skilled in the art can easily claim that a client sends a request to create file)(Page 3, lines 3-6); a server of the one or more servers receiving the request message, wherein the request message includes information to create the file (i.e., *“creating a new file causes the client to contact a metadata server.”*) The preceding text clearly indicates that the server receives a request message)(page 3, lines 3-4); creating the file in the cluster file system in response to the information (i.e., *“creating a new file causes the file system to allocate an inode and set some of its basic attributes. Create the requested file”*) the preceding text clearly indicates that upon receiving a request, a file gets created therefore a person skilled in the art can easily claim that creating the file in the cluster file system in response to the information)(page 3, lines 9-10); allocating space in a storage to the file in response to the information (i.e.,

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*“The objects allocated on OSTs hold the data associated with the file...”* The preceding text clearly indicates that the file created is associated with the Object storage test)(page 3, lines 6-7); sending a response message, wherein the response message includes information about the space in the storage (i.e., *“Subsequent I/O to the newly created file is done directly between the client and the OST, which interacts with the underlying OBDs to read and write data.”* The preceding text clearly indicates that there is a communication going on between the client and OST to determine to create file. Therefore, a person skilled in the art can easily claim a response message includes information indicative of the space in the storage to create file)(page 3 line 9-11); and the client receiving the response message (i.e., *“Actual file I/O is done directly between Object Storage Targets and client systems.”* The preceding text clearly indicates that there is a communication going between client and the OST therefore one skilled in the art can claim that upon completion of creating file, the OST sends a response to the client to notify it)(page 6 lines 2-4).

With respect to claim 10, Lustre discloses a server system for pre-allocating space for a file in a cluster file system, the system comprising: a CPU (i.e., *“They decouple computational and storage resources, enabling desktop systems to focus on user and application requests while file servers focus on reading, delivering, and writing data.”* The preceding text clearly indicates that a desktop is being used and since every desktop (client) has a CPU in it for processing data, one skilled in the art can claim of a CPU being implement in the system)(page I line 21-23); a storage coupled to the CPU (i.e., *“Figure 1: Lustre Big Picture.”* The preceding figure clearly shows that

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a client, which comprises of CPU, is connected to a storage device)(Figure 1); and a memory coupled to the CPU, wherein the memory stores program instructions which are executable by the server CPU to: receive a request message (i.e., *“creating a new file causes the client to contact a metadata server.”*) The preceding text clearly indicates that the client contact server before a new file is created therefore a person skilled in the art can claim that the server receives a request message from the client before the file is created)(page 2 fig. 1); create the file in the cluster file system in response to the information (i.e., *“creating a new file causes the file system to allocate an inode and set some of its basic attributes. Create the requested file”*) the preceding text clearly indicates that upon receiving a request, a file gets created therefore a person skilled in the art can easily claim that creating the file in the cluster file system in response to the information)(page 3); allocate space in the storage to the file in response to the information (i.e., *“The objects allocated on OSTs hold the data associated with the file...”*) The preceding text clearly indicates that the file created is associated with the Object storage test)(page 3, lines 9-10); and send a response message, wherein the response message includes information about the space in the storage (i.e., *“Subsequent I/O to the newly created file is done directly between the client and the OST, which interacts with the underlying OBDs to read and write data.”*) The preceding text clearly indicates that there is a communication going on between the client and OST to determine to create file. Therefore, a person skilled in the art can easily claim a response message includes information indicative of the space in the storage to create file)(page 3).



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With respect to claim 13, Lustre discloses a client system for pre-allocating space for a file in a cluster tile system, the system comprising: a CPU (i.e., *“They decouple computational and storage resources, enabling desktop systems to focus on user and application requests while file servers focus on reading, delivering, and writing data.”* The preceding text clearly indicates that a desktop is being used and since every desktop (client) has a CPU in it for processing data, one skilled in the art can claim of a CPU being implement in the system)(page 1 line 21-22); and a memory coupled to the CPU, wherein the memory stores program instructions which are executable by the CPU to: send a request message wherein the request message includes information to create the file (i.e., *“creating a new file causes the client to contact a metadata server, which creates an inode for the file and then contacts the OSTs to create objects that will actually hold file data.”* The preceding text clearly indicates that before a file can be created, the client has to contact the object storage target (OST) therefore one skilled in the art can easily claim that a client sends a request to create file)(Page 3, lines 3-6); and receive a response message (i.e., *“Actual file I/O is done directly between Object Storage Targets and client systems.”* The preceding text clearly indicates that there is a communication going between client and the OST therefore one skilled in the art can claim that upon completion of creating file, the OST sends a response to the client to notify it)(page 3, lines 9-10).

With respect to claims 16, 19, 22, 25 and 29 Lustre discloses a method wherein the file system is a cluster file system (i.e., *“Sharing existing file systems in a cluster file system to provide redundancy and load balancing to existing operations is*

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*the ultimate dream for small scale clusters.*" The preceding text clearly indicated that cluster file system is being implemented in the system)(page 12, lines 1-3).

With respect to claims 17, 20, 23, 26, and 30 Lustre discloses a method wherein the file system is a storage area network (SAN) file system (i.e., *"provide file system sharing with full coherency by providing support for SAN networking."* The preceding text clearly indicates that storage area network is being implemented in the system)(page 12, lines 4-6).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 6, 14, 15, 18, 21, 24, 27 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Lustre (A scalable, High-Performance File System Cluster File Systems, Inc. and Lustre hereinafter) in view of David Noveck et al. (U.S. Patent No. 5218695 and Noveck hereinafter).

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With respect to claim 5, Lustre does not disclose a system, wherein the method further includes de-allocating the space in response to an amount of time transpiring after said allocating.

Noveck discloses a system, wherein the method further includes de-allocating the space in response to an amount of time transpiring after said allocating (i.e., “...*If an attempt is made to de-allocate an I/OSTRING while the HOLD COUNT is non-zero, the I/OSTRING will only be de-allocated when the HOLD COUNT reaches zero.*” The preceding text clearly indicates that space is deleted, therefore one skilled in the art can claim de-allocating the space in response to an amount of time transpiring after said allocating)(col. 10 lines 34-37).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teaching of Lustre with the teaching of Noveck to include de-allocating the space in response to an amount of time transpiring after said allocating with the motivation to being able to Create space in the storage device. (Noveck col. 10 lines 34-37).

With respect to claims 6, 15 and 28, Lustre does not disclose a system wherein the method further includes setting the amount of time

Noveck discloses setting the amount of time (i.e., “*Batching allows the processing of multiple requests to the same file all pending at the same time to be processed.*” The preceding text clearly indicates that a time is assigned to process a request.)(col.8 lines 16-18).

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It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teaching of Lustre with the teaching of Noveck to include setting the amount of time with the motivation to being able to create and open file at a given time (Noveck col.8 lines 16-18).

With respect to claims 14, 18, 21, 24 and 27, Lustre discloses a method for operating a file system, comprising: the file system receiving a command to open a file, wherein a space has been allocated to the file prior to said receiving, wherein the command to open the file includes information instructing the file system to de-allocate the space, wherein the file system is configured to conditionally perform: in the event a request to store data in the file is received prior to a predetermined amount of time transpiring, storing said data in the space allocated to the file (i.e., "*which creates an inode for the file and then contacts the OSTs to create objects that will actually hold file data.*") The preceding text clearly indicates that upon receiving a request, the system find a storage area for the file to be stored therefore, one skilled in the art can easily claim storing said data in the space allocated to the file)(page 3, lines 3-6).

Lustre does not disclose an event said request is not received prior to the predetermined amount of time transpiring, de-allocating said space

Noveck discloses an event said request is not received prior to the predetermined amount of time transpiring, de-allocating said space (i.e., "*...If an attempt is made to de-allocate an I/OSTRING while the HOLD COUNT is non-zero, the I/OSTRING will only be de-allocated when the HOLD COUNT reaches zero.*") The

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preceding text clearly indicates that the space is unassigned when the given time expires therefore a person skilled in the art can also claim that request is not received prior to the predetermined amount of time transpiring, de-allocating said space)(col. 10 lines 34-37).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teaching of Lustre with the teaching of Noveck to include an event said request is not received prior to the predetermined amount of time transpiring, de-allocating said space with the motivation to being able to maintain the amount of space in the storage device. (Noveck col. 10 lines 34-37).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph C. Opare-Abetia whose telephone number is (571) 272-6594. The examiner can normally be reached on mon-fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JEFFREY A. GAFFIN can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph Opare-Abetia

Patent Examiner

Technology Center 2165

January 11 2006

*Apur Mehta*  
Apur Mehta  
Primary Examiner  
T.C. 2165